Qty:



Friday, 02/05/2008 2:55:32 PM Julie Lecocq

### **Process Sheet**

: CU-DAR001 Dart Helicopters Services Customer

Job Number : 39013 : 10278 **Estimate Number** 

P.O. Number

Prsht Rev.

This Issue

: 02/05/2008 : NC

: // : 37610 S.O. No. :

Type

: MACHINED PARTS

Due Date

**Drawing Name** 

: D3121141

Part Number **Drawing Number** 

: D3121 REV E : N/A

: BRACKET ASSEMBLY

**Project Number Drawing Revision** 

Material

: 20/05/2008

30 Um:

Each

**Previous Run** Written By

First Issue

Checked & Approved By

Comment ...

: Est Rev:Pick:A 04.02.18 New issue KJ/DS

Est Rev:B ECN 1060 07-11-12 DD verified by: EC

**Additional Product** 

Job Number:

Seq. #:

Machine Or Operation:

Description:

1.0

M174B1000X02000

17-4 SS Bar

Comment: Qty.:

0.5775 f(s)/Unit

Total: 17.3250 f(s)

Material: 17-4 SS Bar per AMS 5604/5643 (M17-4-B1.000x02.000)

Identify for D3121-111

Batch: 107956

BAND SAW

2.0

BAND SAW

Comment: BAND SAW

Cut blanks: (1.000" x 2.000") 6.600" long

3.0

Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine D3121-111 as per Folio FA361 and Dwg D3121Identify as D3121-111

2-Deburr

3-Scribe batch number

QC2

INSPECT PARTS AS THEY COME OFF MACHIN

4.0



Comment: INSPECT PARTS AS THEY COME OFF MACHINE



### Dart Aerospace Ltd

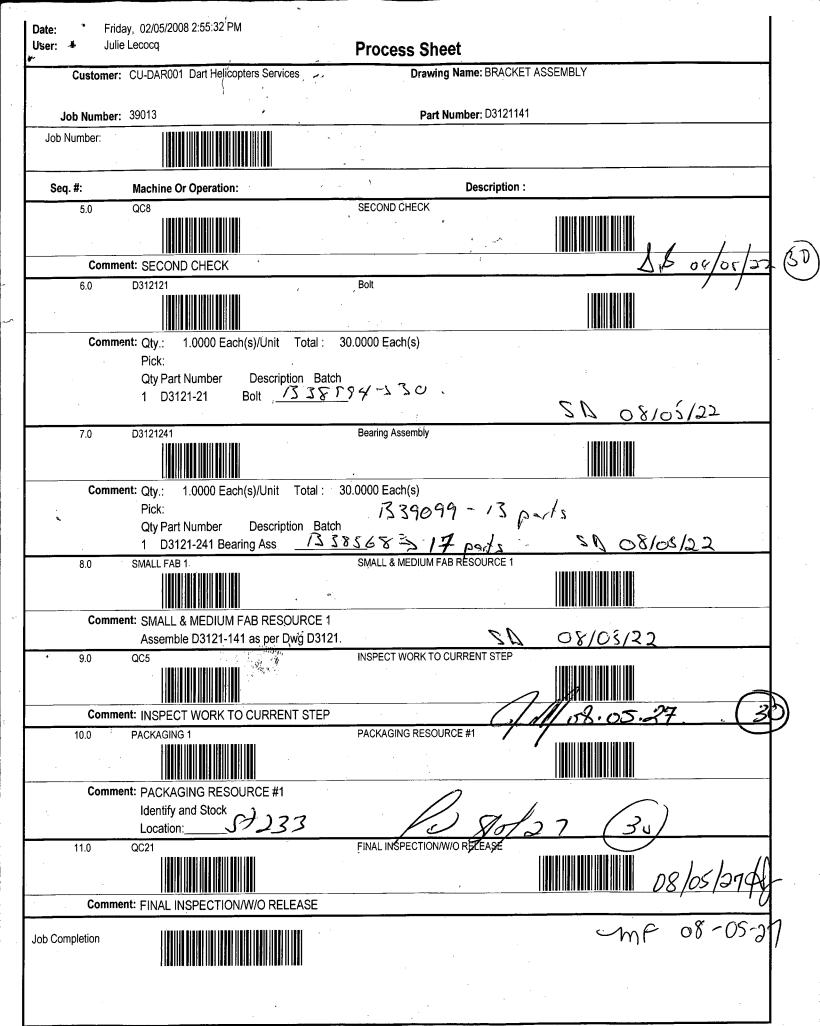
| W/O: |      | WORK ORDER CHANGES    |  |   |  |      |     |                                     |                          |  |
|------|------|-----------------------|--|---|--|------|-----|-------------------------------------|--------------------------|--|
| DATE | STEP | STEP PROCEDURE CHANGE |  |   |  | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |  |
|      |      |                       |  |   |  |      |     |                                     |                          |  |
|      |      |                       |  |   |  |      |     |                                     |                          |  |
|      | -    |                       |  | - |  |      |     |                                     |                          |  |
|      |      |                       |  |   |  |      |     |                                     |                          |  |
|      |      |                       |  |   |  |      |     |                                     |                          |  |
|      |      |                       |  |   |  |      |     |                                     |                          |  |

Part No: D3121-141 PAR #: NA Fault Category: Pol Mahind Park NCR: Yes No DQA: D

Date: <u>@2|05/29</u>

QA: N/C Closed: Date: 08/05/30

| NCR: 30     | 1013  | W                              | ORK OR               | DER NON-CONFORMANCE                             | (NCR)                  |              |           |                          |
|-------------|-------|--------------------------------|----------------------|---|------------------------|--------------|-----------|--------------------------|
|             |       | Description of NC              |                      | Corrective Action Section B                     |                        | Verification | Approval  | Approval                 |
| DATE        | STEP  | Section A                      | Initial<br>Chief Eng | Action Description Chief Eng                    | Sign &<br>Date         | Section C    | Chief Eng | Approval<br>QC Inspector |
| odos/2      | # 2   | Lyscrap, used carbon steel.    |                      | ( Land 2 )                                      | 890435                 |              |           |                          |
|             | 「ヘレー  | Operated used warmy may        | Postarz              | SCRAP and Destro and<br>Repla will correct mat. |                        | solorizz     | POXOLE    | 08/05/22                 |
| 1 \         | 业     | 1 Sciap broken in part         |                      | Scrop and Destry and                            | 27                     |              |           | 5                        |
| odsil       |       | it happers.                    | horale               | Replace Qty (x) B+ MI07959                      | 08/04/22               | odista.      | Cas 1042  | Odoslez                  |
|             | 也 2 > | l part chamber not<br>machined |                      | machine donter and                              | $1 \vee V \setminus 2$ |              |           |                          |
| ill or less |       | Pinon to Being Pinisher        | horials              | Scrop an Defro                                  |                        | odota        | Conver -  | 04des /2                 |



Page 2

Form: rprocess

### **Dart Aerospace Ltd**

|         | -    |                                       |                      |                             |        |                |          |       |                                     |                          |
|---------|------|---------------------------------------|----------------------|-----------------------------|--------|----------------|----------|-------|-------------------------------------|--------------------------|
| W/O:    |      |                                       | W                    | ORK ORDER CH                | ANGES  | •              |          |       |                                     |                          |
| DATE    | STEP | PRO                                   | OCEDURE CHA          | ANGE                        |        | Ву             | Date     | Qty   | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       | •                    |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       | :                                   |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
| Part No | :    | PAR #:                                | Fault Cate           | egory:                      | NCR:   | Yes I          | No DQ    | A:    | Date:                               |                          |
|         |      |                                       |                      |                             |        | QA: N/         | C Closed | d:    | Date:                               |                          |
| NCR:    |      | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | NORK ORD             | ER NON-CONFO                | RMANCE | (NCR           | )        |       |                                     |                          |
| DATE    | STED | Description of NC                     |                      | Corrective Action Section B |        |                | Verific  | ation | Approval                            | Approval                 |
| DATE    | STEP | Section A                             | Initial<br>Chief Eng | Action Descrip              | tion   | Sign &<br>Date | Section  |       | Chief Eng                           | QC Inspector             |
|         |      |                                       |                      | •                           |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      | ·                           |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                |          |       |                                     |                          |
|         |      |                                       |                      |                             |        |                | -        |       |                                     |                          |
|         |      |                                       |                      |                             |        |                | :        |       |                                     |                          |
|         |      |                                       | * .                  |                             |        |                |          |       |                                     |                          |

NOTE: Date & initial all entries

| DART AEROSPACE LTD           | Work Order:  | 39013       |
|------------------------------|--------------|-------------|
| Description: Bracket         | Part Number: | D3121-111   |
| Inspection Dwg: D3121 Rev: E |              | Page 1 of 1 |

### FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

|          | Drawing   | Tolerance     | Actual    | Accept   | Reject  | Method of  | Comments |
|----------|-----------|---------------|-----------|----------|---------|------------|----------|
|          | Dimension | Totoranoc     | Dimension | , tooopt | 110,000 | Inspection |          |
|          | Ø0.392    | +0.002/-0.000 | 6.322     |          |         |            |          |
|          | 0.75      | +/-0.030      | 2751      | /_       |         |            |          |
|          | 0.375     | +/-0.010      | . 375     |          |         |            |          |
|          | 2.14      | +/-0.030      | 214       |          |         |            |          |
|          | 1.96      | +/-0.030      | 1.960     |          |         |            |          |
|          | 0.280     | +/-0.010      | -286      |          |         |            |          |
|          | 3.330     | +/-0.010      | 3.328     |          | ·       |            |          |
|          | 3.630     | +/-0.010      | 3.636     |          | L       |            |          |
|          | R0.25     | +/-0.030      | R.25      |          |         |            |          |
| î        | R0.375    | +/-0.010      | R.375     |          |         |            |          |
| 16       | Ø0.201    | +0.005/-0.00  | 0.203     |          |         |            |          |
|          | 0.100     | +/-0.010      | -100      |          |         |            |          |
|          | 4.580     | +/-0.010      | 4.586     |          |         |            |          |
|          | 6.18      | +/-0.030      | 6.178     |          |         |            |          |
|          | 5.89      | +/-0.030      | 5.851     |          |         | . •        |          |
|          | 0.080     | +/-0.010      | 1075.     |          |         |            |          |
|          | 0.300     | +/-0.010      | -287      |          |         |            |          |
|          | 30°       | +/-0.1°       | 300       |          | ,       |            |          |
|          | R0.25     | +/-0.030      | R.25      |          |         |            |          |
|          | 0.130     | +/-0.010      | . 130     |          |         |            |          |
|          | 0.664     | +/-0.010      | -664      |          |         |            |          |
| $\vdash$ | 0.381     | +/-0.010      | 38/       |          |         |            |          |
|          | 0.201     | +/-0.010      | 0.201     |          |         |            |          |
|          | 0.400     | +/-0.010      | 0.399     |          |         |            |          |
|          | 0.580     | +/-0.010      | .580      |          |         |            |          |
|          | 100°      | +/-0.1°       | 100       |          |         |            |          |
| F        | 0.032     | +0.000/-0.010 | .030      |          |         |            |          |

Measured by: Shape Audited by: Date: N/A

Date: 08/05/13 Date: 08/05/14 Date: N/A

| Rev | Date     | Change  | Revised by | Approved |
|-----|----------|---|------------|----------|
| Α   | 04.01.12 | New Issue P/O D3121-141                         | KJ/RF      |          |
| В   | 04.05.05 | Dimensions changed/re-arranged per Dwg revision | KJ/JLM     |          |
| С   | 06.06.14 | Dwg Rev. updated                                | KJ/JLM L   |          |
| D   | 08.01.16 | Dimensions updated per Dwg Rev. E               | KJ/EC/DD   | 136      |





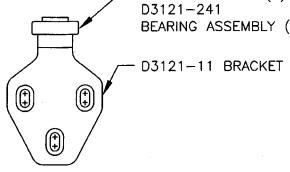
| DESIGN DRAWN BY |         | DRAWN BY | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA                   |  |  |
|-----------------|---------|----------|---|--|--|
| CHECK           | KED     | APPROVED | DRAWING NO. REV. E  |  |  |
|                 | #       |          | D3121 SHEET 1 OF 10   |  |  |
| DATE            |         |          | TITLE SCALE   |  |  |
| 07.1            | 1.07    |          | BRACKET ASSEMBLY 1:2  |  |  |
| Α               |         | 02.04.15 | NEW ISSUE   |  |  |
| В               |         | 03.01.16 | ADD RIDGES; ADD MAT'L PROP; FIX P/N<br>ADD -141/-143/-144/-145/-146 |  |  |
| С               |         | 04.02.17 | ADD CLEARANCE; USE -241 BEARING                                     |  |  |
| D               |         | 06.05.17 | D3121-25 CAP WAS 1.024, NOW 1.000                                   |  |  |
| E               | · · · · | 07.11.07 | ADD TOLERANCE TO 0.032 (DETAIL B)                                   |  |  |

# RELEASED

D3121-21 BOLT (1) D3121-241 BEARING ASSEMBLY (1)

D3121-041 BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-33)



D3121-21 BOLT (1) D3121-241 BEARING ASSEMBLY (1) (2 PLACES)

D3121 - 13/-14**BRACKET** 

D3121-21 BOLT (1) D3121-241 BEARING ASSEMBLY (1) (2 PLACES)

D3121-15/-16 BRACKET

### D3121-043 (SHOWN) / D3121-044 (OPPOSITE) BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-37/-38)

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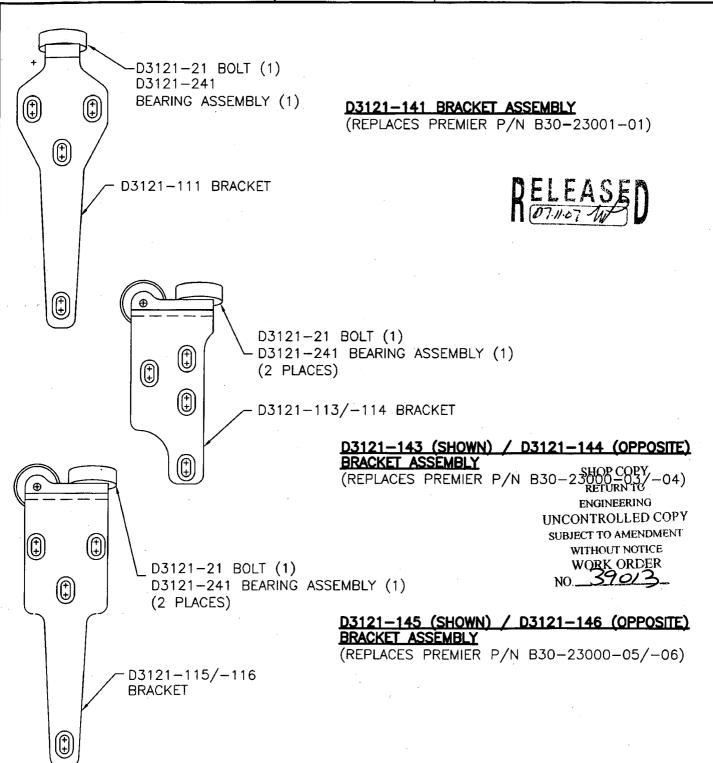
### D3121-045 (SHOWN) / D3121-046 (OPPOSITE) BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-35/-36)

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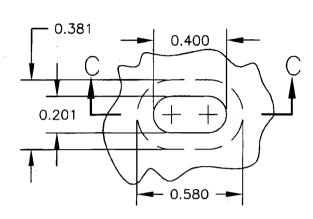
| DESIGN   | DRAWN BY | DART AEROSP<br>HAWKESBURY, ONTAR |               |
|----------|----------|----------------------------------|---------------|
| CHECKED  | APPROVED | DRAWING NO.                      | REV. E        |
| 4        |          | D3121                            | SHEET 2 OF 10 |
| DATE     |          | TITLE                            | SCALE         |
| 07.11.07 |          | BRACKET ASSEMBLY                 | 1:2           |

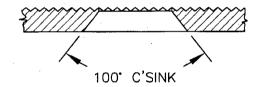




| DESIGN   | DRAWN BY | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA |                         |  |  |
|----------|----------|--|-------------------------|--|--|
| CHECKED  | APPROVED | DRAWING NO.                                    | REV. E<br>SHEET 3 OF 10 |  |  |
| DATE     |          | TITLE  | SCALE                   |  |  |
| 07.11.07 |          | BRACKET ASSEMBLY                               | 1:1                     |  |  |

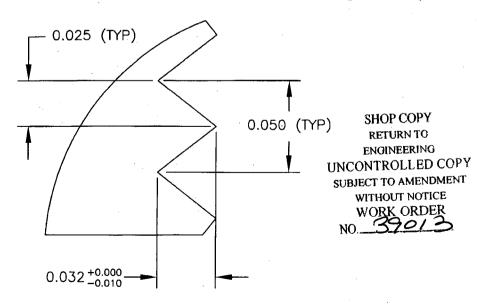
SLOT DETAIL SCALE 2:1 VIEW ROTATED





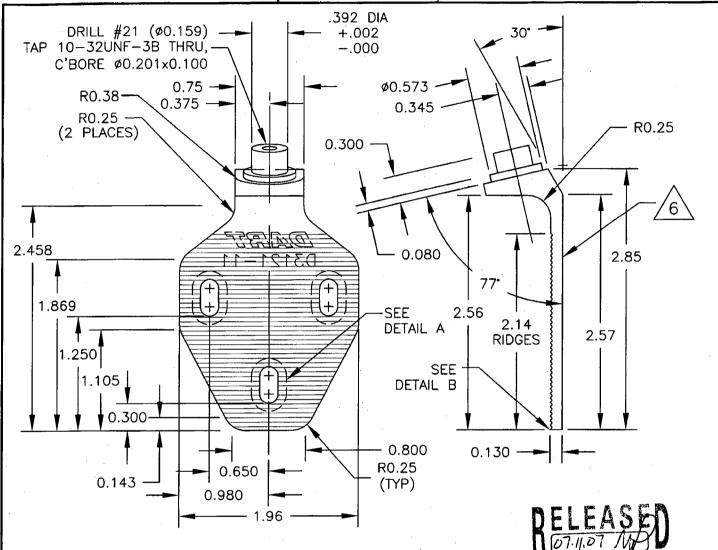
RELEASED

<u>DETAIL B:</u> RIDGE DETAIL PARTIAL SECTION SCALE 1:20





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|---|-----------|-----------|---|---------------|--|--|
|   | CHECKED _ | APPROVED, | DRAWING NO.                                       | REV. E        |  |  |
|   | #         | -#        | D3121   | SHEET 4 OF 10 |  |  |
| ł | DATE      |           | TITLE   | SCALE         |  |  |
|   | 07.11.07  |           | BRACKET ASSEMB                                    | LY 1:1        |  |  |



### D3121-11 BRACKET

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi

2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

3) ALL DIMENSIONS ARE IN INCHES

4) BREAK ALL SHARP EDGES 0.005 TO 0.015

5) ENGRAVE DART P/N & LOGO AS SHOWN

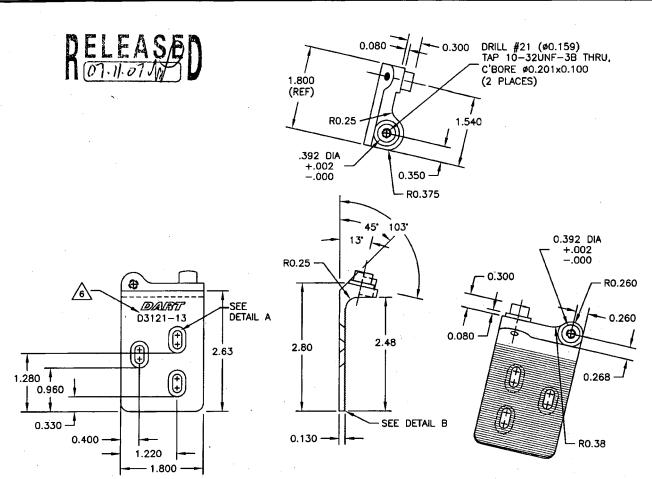
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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|----------|-----------|---|---------------|--|--|
| CHECKED  | APPROVED  | DRAWING NO.                                       | REV. E        |  |  |
| #        | <b>-#</b> | D3121   | SHEET 5 OF 10 |  |  |
| DATE     |           | TITLE   | SCALE         |  |  |
| 07.11.07 |           | BRACKET ASSEMBLY                                  | 1:2           |  |  |



# D3121-13 BRACKET (SHOWN) D3121-14 BRACKET (OPPOSITE)

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)

MIN ULTIMATE TENSILE STRENGTH = 150 ksi

MIN YIELD TENSILE STRENGTH = 100 ksi
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

3) ALL: DIMENSIONS ARE IN INCHES

4) BREAK ALL SHARP EDGES 0.005 TO 0.015

5) ENGRAVE DART P/N & LOGO AS SHOWN

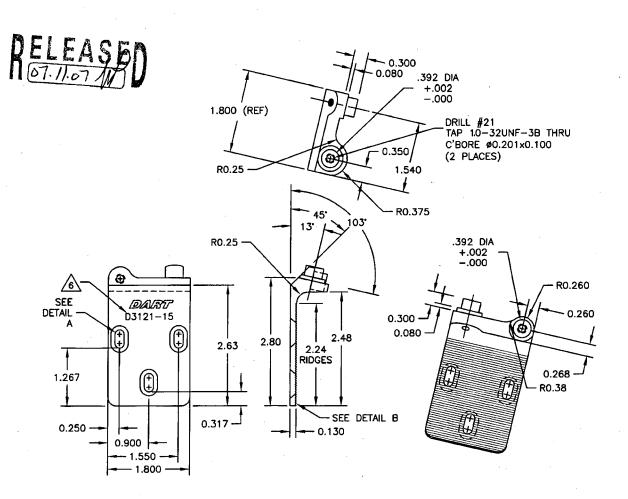
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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|-----------|----------|----------------------------------|---------------|
| CHECKED # | APPROVED | DRAWING NO.                      | REV. E        |
| 9#        |          | D3121                            | SHEET 6 OF 10 |
| DATE      |          | TITLE                            | SCALE         |
| 07.11.07  |          | BRACKET ASSEMBLY                 | 1:2           |



## D3121-15 BRACKET (SHOWN) D3121-16 BRACKET (OPPOSITE)

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi

2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

3) ALL DIMENSIONS ARE IN INCHES

4) BREAK ALL SHARP EDGES 0.005 TO 0.015

5) ENGRAVE DART P/N AND LOGO AS SHOWN

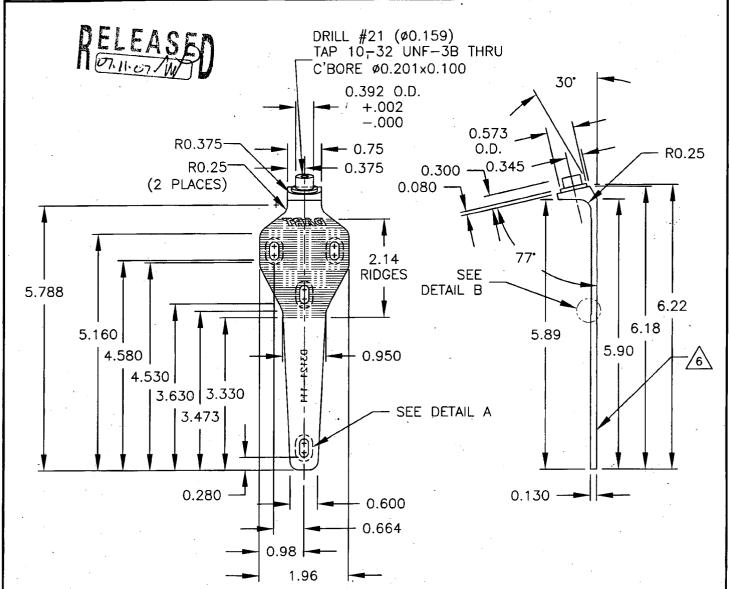
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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|-----------|----------|--|---------------|
| CHECKED _ | APPROVED | DRAWING NO.                                    | REV. E        |
| 4         | #        | D3121  | SHEET 7 OF 10 |
| DATE      | -        | TITLE  | SCALE         |
| 07.11.07  |          | BRACKET ASSEMBLY                               | 1:2           |



#### D3121-111 BRACKET

- 1) REPLACES PREMIER P/N B32-23001-11
- 2) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)

MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi

- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHEWISE NOTED .
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN
- 7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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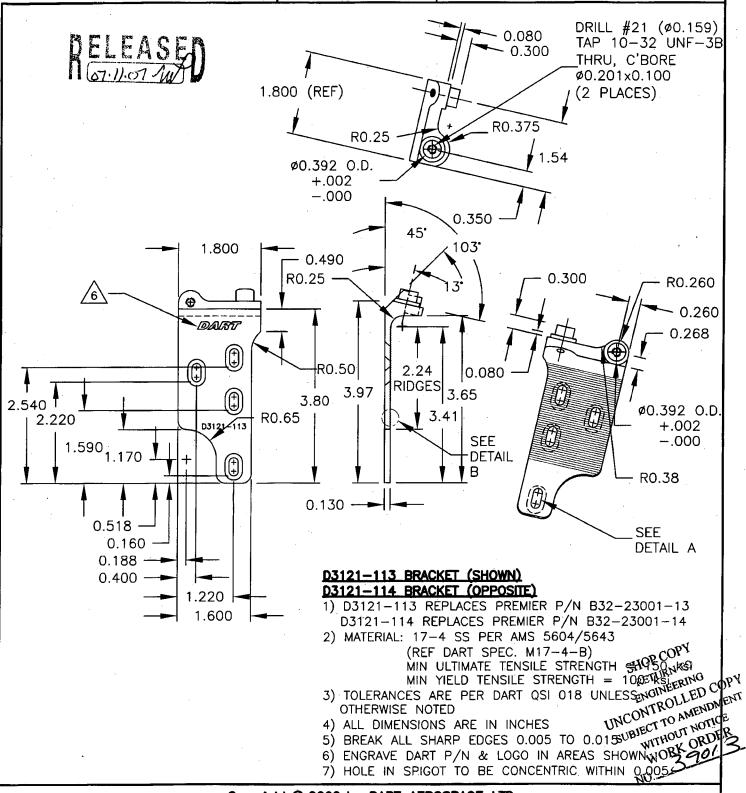
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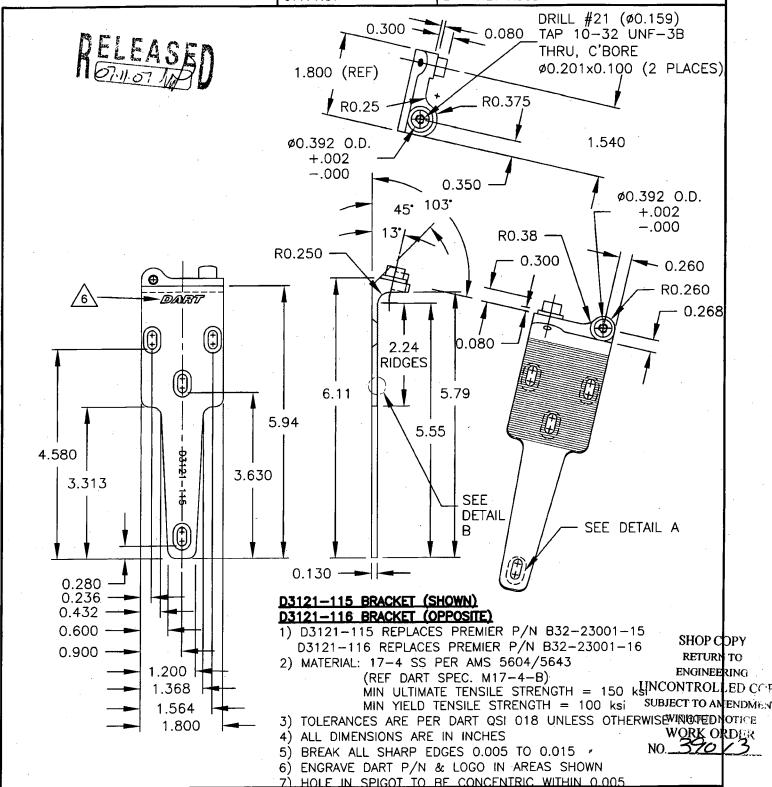
| DESIGN   | DRAWN BY | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA |               |  |
|----------|----------|--|---------------|--|
| CHECKED  | APPROVED | DRAWING NO.                                    | REV. E        |  |
| #        | -        | D3121  | SHEET 8 OF 10 |  |
| DATE     |          | TITLE  | SCALE         |  |
| 07.11.07 |          | BRACKET ASSEMBLY                               | 1:2           |  |



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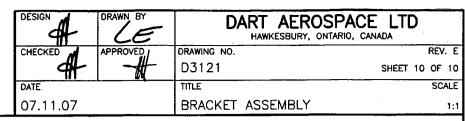


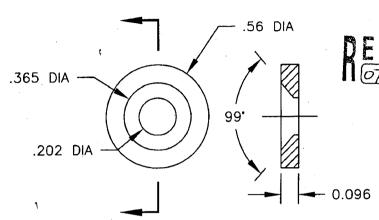
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|----------|-------------|--|---------------|--|
| CHECKED  | APPROVED    | DRAWING NO.                                    | REV. E        |  |
| 4        | <b>-#</b> - | D3121  | SHEET 9 OF 10 |  |
| DATE     |             | TITLE  | SCALE         |  |
| 07.11.07 |             | BRACKET ASSEMBLY                               | 1:2           |  |



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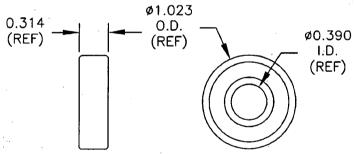






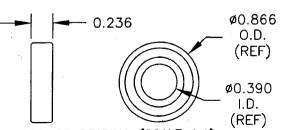
### D3121-17 WASHER (SCALE 2:1)

- 1) REPLACES PREMIER P/N B32-23001-17
- 2) MATERIAL: AISI 303 SS ROUND BAR, ANNEALED (REF DART SPEC. M303R)
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015



#### D3121-19 BEARING (SCALE 1:1)

- 1) POSSIBLE SUPPLIER: KING BEARING P/N 6000-2ZJ/EM 1) MATERIAL: DELRIN ROD, Ø1.25 FAFNIR P/N 9100KDD
- 2) ALL DIMENSIONS ARE IN INCHES



### D3121-23 BEARING (SCALE 1:1)

1) POSSIBLE SUPPLIER: SKF P/N 61900-2Z OR KML P/N 6900-ZZ

ALL DIMENSIONS ARE IN INCHES

0.080 0.050 TO 0.060 D3121-21 BOLT (SCALE 1:1) 1) MATERIAL: AISI 303 SS HEX, ANNEALED

- (REF DART SPEC. M303H0.500)
- 2) FINISH: NONE

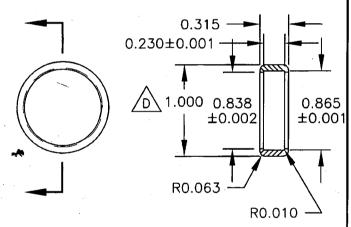
0.375 -

3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

TAP 10-32

UNF-3A

- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015



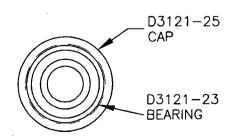
### D3121-25 CAP (SCALE 1:1)

(REF DART SPEC. M-DELRIN-R1.250)

2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

SHOP CS)PYLL DIMENSIONS ARE IN INCHES

RETURN TO ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER



D3121-241 BEARING ASSEBLY (SCALE 1:1)

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